1. **Course Number & Name:** EE 112 Fundamentals of Digital Logic Design

2. **Course Credit and Contact Hours:** 1 Unit, 3 hours

3. **Course Coordinator:** Dr. Sara Kassis


5. **Supplemental Materials:** None

6. **Specific Course Information:**
   a. **Description:** Review of set theory and binary system, digital logic, Venn diagram, logic gates, minimization techniques, combinatorial logic and design of simple combinatorial logic circuits such as 1-bit adder; concept of coders, decoders and integrated circuits.
   b. **Prerequisites:** EE 110 and must be eligible to enroll in Math 45 or Math 161. Instructor’s consent is required for co-enrollment in EE 110.
   c. **Co-Requisite:** None
   d. **Status:** ☑ Required for EE program, ☐ Elective, ☐ Selected Elective

7. **Specific Goals for the Course:**
   a. **Specific outcomes of instruction:** Upon successful completion of this course the students will be able to:
      i. Install and properly wire a digital integrated circuit to a breadboard.
      ii. Demonstrate understanding of AND, OR, NOT, NAND, NOR, XOR, XNOR logic gates and their digital functions using truth tables, Boolean expressions, and circuit diagrams.
      iii. Properly build and test combinational digital circuits along with generating truth tables, Boolean expressions, Sum of Minterm expressions.
      v. Build combinational digital circuits in all NAND form.
      vi. Design and build real world project such as car alarms and traffic lights.
   b. **This course supports the following ABET Student Outcomes:**
      i. **SO-7:** *an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*
8. **Brief List of Topics to be Covered:**
   a. Binary to decimal number system conversion and vice versa
   b. Basic logic gates and their functions
   c. Universal gates
   d. Truth tables
   e. Boolean algebra
   f. DeMorgan’s theorems
   g. Karnaugh maps
   h. Sum of products form
   i. Minterms
   j. Two level NAND networks